

MTS-3349US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Hiroyuki Nakamura et al. : Art Unit: To be assigned  
Serial No.: To be assigned : Examiner: To be assigned  
Filed: Herewith :  
For: SURFACE ACOUSTIC WAVE :  
FILTER AND  
COMMUNICATION DEVICE  
USING THE FILTER

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, DC 20231

SIR:

Prior to examination, please amend the above-identified application as follows:

SPECIFICATION:

Please replace the paragraph beginning at page 1, line 10 with the following:

In recent years, surface acoustic wave filters have been widely used in mobile communication devices. Surface acoustic wave filters of a longitudinal mode type or a ladder type are used as a filter in a radio frequency (RF) stage. With the improvement in performance of communication devices such as portable telephones, there has been an increasing demand for reducing the loss and increasing the attenuation in surface acoustic wave filters.

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Please replace the section beginning at page 5, line 10 with the following:

One aspect of the present invention is a surface acoustic wave filter comprising:

Please replace the paragraph beginning at page 5, line 20 with the following:

Another aspect of the present invention is the surface acoustic wave filter, wherein the pitch of electrode fingers of the IDT electrode larger in number of electrode fingers in said input and output IDT electrode is larger than the pitch of electrode fingers smaller in number of electrode fingers.

Please replace the section beginning at page 6, line 3 with the following:

Still another aspect of the present invention is a surface acoustic wave filter comprising:

Please replace the paragraph beginning at page 6, line 13 with the following:

Yet still another aspect of the present invention is the surface acoustic wave filter, wherein the metalization ratio of an IDT electrode larger in number of electrode fingers in said input and output IDT electrodes is lower than the metalization ratio of an IDT electrode smaller in number of electrode fingers.

Please replace the paragraph beginning at page 6, line 19 with the following:

Still yet another aspect of the present invention is the surface acoustic wave filter, wherein if an IDT electrode has a plurality of electrode finger pitches, the pitch of main excitation electrode fingers is set as a basic pitch.

Please replace the paragraph beginning at page 6, line 24 with the following:

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A further aspect of the present invention is the surface acoustic wave filter, wherein a peak frequency of a radiation characteristic of said input IDT electrode is substantially equal to a peak frequency of a radiation characteristic of said output IDT electrode.

Please replace the section beginning at page 7, line 5 with the following:

A still further aspect of the present invention is the surface acoustic wave filter, wherein one of said input IDT electrode and said output IDT electrode comprises a first IDT electrode including a pair of electrode fingers opposed to each other;

Please replace the section beginning at page 7, line 24 with the following:

A yet further aspect of the present invention is the surface acoustic wave filter, wherein one of said input IDT electrode and said output IDT electrode comprises first, fourth, and fifth IDT electrodes each including a pair of electrode fingers opposed to each other;

Please replace the paragraph beginning at page 8, line 24 with the following:

A still yet further aspect of the present invention is the surface acoustic wave filter, wherein the film thickness of said first IDT electrode and the film thickness of each of said second and third IDT electrodes are different from each other.

Please replace the paragraph beginning at page 9, line 4 with the following:

An additional aspect of the present invention is the surface acoustic wave filter, wherein the material of said first IDT electrode and the material of each of said second and third IDT electrodes are different from each other.

Please replace the section beginning at page 9, line 9 with the following:

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A still additional aspect of the present invention is the surface acoustic wave filter, wherein the metalization ratio of said first IDT electrode and the metalization ratio of each of said second and third IDT electrodes are equal to each other;

Please replace the paragraph beginning at page 9, line 12 with the following:

A yet additional aspect of the present invention is the surface acoustic wave filter, wherein the metalization ratio of said first IDT electrode, the metalization ratio of said second IDT electrode and the metalization ratio of said third IDT electrode are different from each other.

Please replace the paragraph beginning at page 10, line 1 with the following:

A still yet additional aspect of the present invention is the surface acoustic wave filter, wherein a plurality of filter tracks each having first, second, and third IDT electrodes, and first and second reflector electrodes are formed on said piezoelectric substrate, and said plurality of filter tracks function as one filter in cooperation with each other.

Please replace the paragraph beginning at page 10, line 8 with the following:

A supplementary aspect of the present invention is the surface acoustic wave filter, wherein each of said plurality of filter tracks is identical in configuration to the others.

Please replace the paragraph beginning at page 10, line 12 with the following:

A still supplementary aspect of the present invention is the surface acoustic wave filter, wherein at least one of said plurality of filter tracks is different in configuration from the others.

Please replace the section beginning at page 10, line 16 with the following:

A yet supplementary aspect of the present invention is the surface acoustic wave filter, further comprising a first reflector electrode placed on the opposite side of said second IDT electrode on said piezoelectric substrate opposite from the side on which said first IDT electrode are placed; and

Please replace the section beginning at page 11, line 4 with the following:

A still yet supplementary aspect of the present invention is a method of manufacturing a surface acoustic wave filter, comprising

Please replace the paragraph beginning at page 11, line 14 with the following:

Another aspect of the present invention is a communication device comprising:

a transmitting circuit which outputs a transmitted wave; and

a receiving circuit to which a wave to be received is input,

wherein a surface acoustic wave filter is used in said transmitting circuit and/or in said receiving circuit.

Please replace the paragraph beginning at page 11, line 23 with the following:

Still another aspect of the present invention is a communication device comprising:

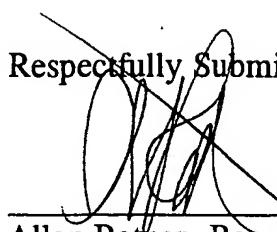
a transmitting circuit which outputs a transmitted wave; and

a receiving circuit to which a wave to be received is input,

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wherein the surface acoustic wave filter is used in said transmitting circuit and/or in said receiving circuit.

Respectfully Submitted,

  
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Attorney for Applicants

AR/jam

Enclosures: Version with markings to show changes made

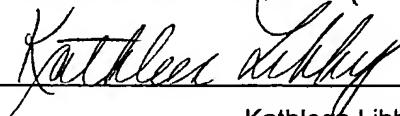
Dated: July 15, 2002

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Kathleen Libby

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